SECTION 6 - POLLUTION PREVENTION

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6 POLLUTION PREVENTION

Synopsis

This section is promulgated to ensure an effective pollution prevention program is created and implemented at all NWS facilities and work sites. The section applies to all NWS facilities and work sites.

Initial Implementation Requirements:

- **Appoint a Pollution Prevention Program Coordinator** *(6.7.1a)*
- **Compare Site/Facility Operations with the Requirements of this Section**
  - Facility development of P2 Program *(6.7)*
    - specify facility management and personnel support in policy statement *(6.7.1 a)*
    - assemble P2 Task Group *(6.7.1 b)*
      - define program scope and objectives *(6.7.1c)*
      - determine plan of action/goals/measurable milestones *(6.7.1c)*
    - Perform P2 Survey *(6.7.2)*
      - prioritize areas/operations to assess *(6.7.2b)*
      - choose assessment team - internal personnel, external personnel or both *(6.7.2c)*
  - Review application of P2 approaches at facility
    - source reduction *(6.8.1)*
      - ensure all operating practices have been reviewed and if necessary modified to incorporate P2 practices *(6.8.1a)*
    - inventory control *(6.8.1 b)*
      - establish an Authorized Use List (AUL) of items necessary and environmentally appropriate for mission performance *(6.8.1b.2)*
      - ensure purchasing procedures control and/or eliminate wasteful/unnecessary/uncontrolled purchases *(6.8.1b)*
      - ensure review of government listings and websites providing suggestions for the purchase of environmentally preferable products and services (Section 9 - Procurement)
    - recycling *(6.8.2)*
      - determine items and/or wastes that may be recycled
      - provide receptacles and designated area for collection of recyclables
  - Ensure all facility personnel are trained in the Facility P2 Program components and their specific role in implementing it

Recurring and Annual Task Requirements:

- **Review and update written Facility P2 Program at least annually**
- **Periodically review AUL for additions/deletions/substitutions *(6.8.1b)***
- **Continued investigation into the use of more efficient and less dangerous practices;**

the use and purchase of less hazardous materials and techniques to control energy *(6.8.3)* and water use *(6.8.4)*

Checklist

6 Pollution Prevention	**YES**	**NO**	**N/A**
1. Has a facility/work site Pollution Prevention (P2) Coordinator been appointed? *(6.7.1a)*	____	____	____
2. Has the facility/work site assembled a P2 Task Group? *(6.7.1b)*	____	____	____
3. Has a P2 survey been completed? *(6.7.2)*	____	____	____
4. Has an "authorized use list" been assembled? *(6.8.1b.2)*	____	____	____
5. Have purchasing controls/procedures been prepared and implemented to eliminate wasteful/unnecessary purchases? *(6.8.1b)*	____	____	____
6. Have recycling opportunities been identified? *(6.8.2)* a. are recycling centers located to enhance participation? *(6.8.2)*	____ ____	____ ____	____ ____
7. Have facility personnel been provided instruction on their role and impact on the P2 program?	____	____	____

6 POLLUTION PREVENTION

6.1 Purpose and Scope

While the NWS does not produce large quantities of waste, a comprehensive environmental management program requires consideration of the ways in which pollution can be eliminated or reduced from the activities undertaken at NWS facilities or work sites.

6.2 Definitions

Authorized Use List - a list of supplies, especially hazardous materials, approved for purchase after review of environmental, safety and health considerations.

Pollution Prevention - the use of materials, processes or practices that reduce or eliminate the creation of pollutants or waste at the source.

6.3 Acronyms Employed in This Section

AUL	-	Authorized Use List
CFR	-	Code of Federal Regulations
EPA	-	Environmental Protection Agency
HM	-	Hazardous Material
HSWA	-	Hazardous & Solid Waste Amendments
HW	-	Hazardous Waste
MSDS	-	Material Safety Data Sheet
NPDES	-	National Pollutant Discharge Elimination System
NWS	-	National Weather Service
NWSH	-	National Weather Service Headquarters
PPA	-	Pollution Prevention Act
P2	-	Pollution Prevention
RCRA	-	Resource Conservation and Recovery Act
SARA	-	Superfund Amendments and Reauthorization Act
TSDF	-	Treatment, Storage or Disposal Facility

6.4 Regulatory Requirements

The concept of pollution prevention has evolved from the laws that attempted to regulate hazardous waste. Soon after RCRA was passed, it became obvious that if a waste wasn't created - it didn't need to be disposed and the money and effort that would have been required to properly manage it would now be available for other things. The pertinent laws were:

6.4.1 The Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) specifies the management of hazardous waste from the process of generation, throughout storage or accumulation and transportation to the treatment, storage or disposal facility (TSDF). The use of pollution prevention as a "Best Management Practice" is the only alternative to this

"cradle to grave" regulatory control.

Section 6002 of RCRA specifically requires Federal Agencies and their contractors to:

- buy EPA-designated products with a recycled content if the agency or the contractor spends more than $10,000 annually on that item.
- purchase the highest percentage of recovered materials practicable.
- eliminate contract language that excludes the purchase or use of recovered materials.
- have an affirmative procurement plan for purchasing EPA-designated products.

6.4.2 The Hazardous and Solid Waste Amendments

The Hazardous and Solid Waste Amendments (HSWA) requires generators of hazardous waste to certify on every hazardous waste manifest that a program is in place "to reduce the volume and toxicity of the wastes that are generated." Additionally, the regulations require generators to report changes in volume and toxicity of waste actually achieved during the past year.

6.4.3 The Pollution Prevention Act

The Pollution Prevention Act (PPA) was passed in 1990 to legally establish the concept that "source reduction is fundamentally different and more desirable than waste management and pollution control." The law establishes the national policy that requires all reasonable attempts be made to prevent or reduce pollution at the source whenever feasible. Pollution that cannot be prevented should be recycled in an environmentally-safe manner whenever feasible. Pollution that cannot be prevented or recycled should then be treated in an environmentally-safe manner. Disposal or other release into the environment should be employed only as a last resort and must be done in an environmentally-safe manner.

6.5 Executive Orders

A number of executive orders specify Federal responsibilities toward environmental issues and include pollution prevention components.

Executive Order 12843 - Procurement Requirements for Federal Agencies for Ozone-Depleting Substances.

Executive Order 12844 - Federal Use of Alternative Fueled Vehicles.

Executive Order 12845 - Requiring Agencies to Purchase Energy Efficient Computer Equipment.

Executive Order 12856 - Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements.

Executive Order 13101 - Greening the Government Through Waste Prevention, Recycling and Federal Acquisition.

Executive Order 13123 - Greening the Government Through Efficient Energy Management.

Executive Order 13148 - Greening the Government Through Leadership in Environmental Management.

Executive Order 13149 - Greening the Government Through Federal Fleet and Transportation Efficiency.

6.6 Pollution Prevention Defined

In order to understand the potential for application of "pollution prevention" (P2) throughout an organization and its operations, the EPA defines pollution prevention as "the use of materials, processes or practices that reduce or eliminate the creation of pollutants or waste at the source. It includes practices that reduce the use of hazardous materials, energy, water or other resources and practices that protect natural resources through conservation or more efficient use."

6.7 Establishment of a Pollution Prevention Program

In order to ensure the success of pollution prevention efforts in the workplace, a formal Pollution Prevention Program will be developed which includes the following factors:

a. Planning and Organization
b. Opportunity Assessment
c. Evaluation of Alternatives
d. Implementation
e. Evaluation of Progress

6.7.1 Planning and Organization

The planning and organization of the program involves three steps: gathering management commitment, setting program goals and organizing an assessment team.

a. Management Support

In order for a Pollution Prevention (P2) Program to work, there must be support from all levels of management. A policy statement will be released by the Station Manager which demonstrates the management commitment necessary to assure maximum facility support for this effort. The statement will reiterate the scope and objectives of the program, identify the Program Coordinator and inform personnel on the development of the P2 Management Plan. Most importantly,

this policy statement will officially recognize the program and request support from all personnel.

Commitment throughout the facility or work site is necessary if a P2 program is to achieve success. Handlers and operational employees who often are involved in the use of chemicals and the generation of waste play a prominent role in the implementation of the P2 program. Bonuses, awards, plaques and other forms of recognition are often used to provide motivation and boost cooperation and participation.

b. Organizing the P2 Committee

One of the duties of the facility P2 Program Coordinator is to assemble a representative group of facility personnel involved in any activity which would influence wasteful practices or pollution generation. This group should consist of employees involved with/in the environmental, worker safety and health, supply, research and development, maintenance as well as any other operations which utilize a hazardous material or produce hazardous waste.

Once assembled, the group will serve to coordinate and brainstorm P2 ideas as well as communicate the program's progress between upper management, middle management and facility personnel.

Initially the P2 group will determine a plan of action and milestones for implementing the program. This group will:

1. designate P2 Coordinators for each operational area
2. prioritize processes/waste streams for assessment
3. select survey team members
4. establish goals using survey information
5. evaluate P2 suggestions
6. approve and implement the selected P2 measures which are demonstrated as feasible and cost-effective
7. establish a schedule for implementing P2 measures
8. identify the man-hours and funds required for the P2 Program
9. monitor, report and track P2 progress and performance.

c. Defining Program Scope and Objectives

One of the first priorities of the P2 Committee is to establish goals that are consistent with the policy statement issued by Management. To define the scope, a determination must be made as to who will be involved, as well as what types of pollution will be minimized under this program.

The defined objectives must be concise and reflect the ultimate outcome of program implementation. While pollution prevention objectives can be broad in direction such as "significantly reduce toxic emissions into the environment," it is often better to establish measurable goals that leave no question of interpretation

(i.e. 2004 will reflect a 20 percent reduction in total hazardous material usage in 2003).

Although goals must be reasonable, they do not have to be 100 percent achievable. Numbers should be viewed as guidelines to strive for in order to propel the program and are in no means a direct indication of failure if not achieved.

In general, most P2 programs will have three basic objectives:

1. assess and document current conditions/practices
2. establish short and long-term goals
3. implement P2 measures

6.7.2 P2 Survey

The purpose of the assessment phase is to develop a comprehensive set of P2 initiatives and to identify the options which deserve additional, more detailed analysis. In order to develop these options, a detailed understanding of the facility's processes, operations and waste management practices is required.

The initial P2 survey will examine and document current procedures, HM/HW management practices, identify processes and characterize waste streams. The gathered information will then be analyzed for areas in which P2 measures may be implemented as well as help to establish implementation priorities.

a. Collecting Data

Prior to the actual facility inspection, some background information can be gathered. Waste stream records can provide a characterization of waste streams generated at the facility. Records such as hazardous waste manifests, permit monitoring records (i.e., NPDES and air permits), SARA Title III reports, Material Safety Data Sheets (MSDSs) and analytical test data can be used. Flow diagrams from a process can be used to provide information and identify sources where materials are used and waste is generated. Additionally, material balances can be used as a source of start-up information for the minimization survey. Material balances represent the amount of material used in the process, the amount of "product" produced and the amount released as waste. Material balances help to identify and quantify losses or emissions. They establish baseline information from which efforts can be measured, as well as develop data needed to estimate the feasibility of equipment modifications or additions. Extra caution is advised in preparing the material balance calculations since they are not easy to perform. Accurate measurement of components is essential in order to avoid large errors.

b. Prioritizing Operations to Assess

Ideally, all operations at a facility should be assessed. However, it may be necessary due to a lack of funds or available personnel to undertake the assessment in a phased manner. An effective approach recommended by EPA is to focus on major usage, waste streams or processes rather than covering the entire facility at once. This course of action requires the setting of priorities. Numerous factors come into play when cataloging the order in which a facility's operation is assessed. Consideration must be given to: compliance with current and future regulations, the cost of management (storage, handling, disposal), potential liability, quantity sent out as waste, hazardous properties of waste and potential recovery of valuable by-products.

c. Choosing an Assessment Team

While the P2 program is concerned with the entire facility, the actual assessment process is focused on an individual operation. Because of this, assessment teams can be established with the task of concentrating on a particular waste stream or particular area of the facility. Each team will include personnel with direct responsibility and knowledge of particular wastes or processes.

Assessments can also be conducted by an independent group or consultant from outside the facility. An outside assessment team can bring in an objective viewpoint and a wide variety of experiences and expertise (especially in the area of current preventive technologies). Examples of where to find off-site teams include your State Pollution Prevention Program and A/E Contractors.

Another option is to gather an internal rotating team of personnel from throughout the facility. This process allows personnel from various areas to observe and make recommendations on other operations. This group is already familiar with the general operations and understand the current management structure.

The facility may wish to combine the last two options to form an internal team with one or two off-site representatives. This type of group retains both familiarity and objectivity during the assessment.

d. The Assessment

After the team has been organized and the specific waste stream or area selected, the assessment process gets underway. If the assessment team consists of individuals from off-site, a formal site tour may be helpful to familiarize the group.

6.8 Approaches to Pollution Prevention

Application of P2 practices on a daily basis in all areas of a facility's practices is the only sure way of effecting a successful program. Techniques for reducing waste and pollution vary in complexity, effectiveness, time and cost. Using the PPA's protocol to P2, *source reduction* is

identified as the first and most desirable option to reduce a facility's impact on the types and amounts of pollution produced.

6.8.1 Source Reduction

From an environmental standpoint, source reduction is the preferred means of minimizing waste. Source reduction reduces or eliminates the generation of pollution at the source.

Source reduction techniques include such items as the establishment of good management practices, process modifications and material substitution. Source reduction includes any action that reduces the amount of waste left over when a job is completed.

Congress specifically stated in the PPA that "source reduction does not entail any form of waste management...and excludes any practice which alters the physical, chemical or biological characteristics or volume of a hazardous substance, pollutant or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service."

a. Operating Practices

Good management practices are procedures or administrative measures that are applied in the workplace in order to minimize pollution. Many are seen as management improvements which involve procedural or organization activities rather than technology, thus having little or no implementation cost.

1. Management and Personnel Practices

As a way to ensure the success of proposed minimization goals, employee support must be gathered. This effort can be accomplished through employee training programs, incentives and bonuses to encourage employees to conscientiously strive to reduce waste.

2. Material Handling and Maintenance

This area includes the reduction in loss of materials due to mishandling, housekeeping practices and improper storage. Investigation of inventory management practices will help to eliminate inefficient practices and/or operations. For example, prevention of spills and leaks by using drip pans and catchment basins during storage, keeping containers of solvents or cleaners closed when not in use and ensuring equipment is maintained and operating correctly.

3. Waste Segregation

Waste segregation practices can help to reduce the volume of hazardous

wastes generated by preventing the mixing of hazardous and non-hazardous wastes. As defined by the "mixture rule" in 40 CFR 261.3(a)(2)(iii) and (iv), such mixture causes the resulting mix to be regulated as a hazardous waste. If segregated, disposal costs are reduced. This action also provides an opportunity for the segregated materials to be included in recycling efforts. For example, used synthetic and petroleum lubricating oil are both recyclable. If mixed together however, they can only be treated as a waste.

4. Cost Accounting Practices

   Cost accounting practices include programs to allocate the waste treatment and disposal costs directly to the areas or groups that generate the waste. This practice makes the groups more aware of the effects of their disposal practices as well as give a financial incentive to minimize the quantities of waste produced.

5. Production Practices

   This area reduces waste by addressing inefficient production start-up or shutdown practices, frequency of equipment cleaning as well as preventive maintenance.

b. Inventory Control

Inventory control is one of the most effective means of controlling an organization's impact on the environment. Purchasing of supplies, especially hazardous materials, require consideration of not only cost, but environmental, safety and health concerns. These issues can be addressed by formulating a ***hazardous material control program***. Such a program controls the types and amounts of material utilized on-site. The program will include:

1. An investigation of all the HM used on-site which is needed to meet job performance requirements.

2. An assessment of the inventory considering environmental, health, safety, storage/handling, cost and procurement issues. The outcome of this review is an "Authorized Use List" (AUL) identifying only those items that are to be used and brought on-site.

3. A person "assigned" to the purchasing of HM in conjunction with the AUL can eliminate unnecessary purchases and ensure waste reduction purchase policies are followed.

After the initial investigation and development of the AUL, it may be appropriate to substitute less hazardous materials where feasible.

The substitution of non-hazardous materials for hazardous raw materials can

greatly reduce the amount of hazardous waste produced. An overall evaluation of the raw materials should consider *why* an item is hazardous (i.e., it is listed as an ozone-depleting substance, or is reactive, toxic or ignitable) as well as *how* the product is used. Product substitutions are frequently process/job dependent. Information regarding material substitution can be found by contacting the Hazardous Technical Information Service (HTIS) at 800-848-4847. The process of substitution requires diligence to ensure that the potentially purchased non-toxic materials do not have other associated handling concerns or costs.

Close control of existing inventories is also important, as it is a possible source of spills, worker exposure and cause of excessive raw materials in stock. Excess materials present another concern - having their shelf lives expire while in storage. These materials may now need to be disposed of as waste. Oftentimes considering the available "unit-of-issue" prior to purchase will avoid this problem.

6.8.2 Recycling

Recycling promotes pollution prevention by reusing or reclaiming a valuable material from a generated waste product. Recycling includes use and/or reuse of the waste as a raw material by returning it to the original or a new process.

Some commonly generated "waste" at a work site may have an opportunity to be recycled with available proven technologies. Aluminum cans, plastics, CDs, packing materials ("peanuts" and cardboard), newspaper, white office paper, vehicle tires, and ink cartridges are a few examples. Many communities include pick-up and management of these waste streams with the regular trash pick-up. Others have drop-off centers for recyclables. The Program Coordinator will identify local recycling opportunities and initiate the collection of these recyclables at the work site. The collection points will be conveniently located and identified to ensure maximum participation by site personnel.

6.8.3 Energy

Pollution prevention extends into areas well beyond the direct production and use of chemicals. It need not involve high-tech, high-cost technologies. Often, everyday common sense procedures will have a significant long-term effect.

Energy efficiency is an area that cuts across many sectors. The creation and use of energy usually entails some environmental damage. The combustion of fossil fuels by utilities/industries releases carbon dioxide, sulfur dioxide and nitrogen dioxide. Other types of pollution result from mining and transporting fossil fuel stocks and disposing of energy plant wastes.

Anyone can foster energy savings by shutting off equipment and lights when not in use, lowering thermostats and purchasing energy-efficient products. The P2 Coordinator or other designated person will investigate energy usage at the work site and ways to increase efficiency and/or decrease or control energy consumption

through appropriate/practical means.

6.8.4 Water

Water conservation and efficient water use can have a positive impact on the environment. Identification and repair of leaks or dripping faucets can add up to significant savings. In applications where large quantities of water are utilized, an investigation will be undertaken to determine the feasibility of decreasing the amount needed or whether reuse may be an option.

6.9 Responsibilities

6.9.1 NWS Headquarters (NWSH)

a. The NWS Environmental/Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this section.

b. The NWSH Environmental/Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this section. The frequency of these regional and field office assessments shall be determined by the NWSH Environmental/Safety Office.

c. Requests for clarification concerning this section shall be directed to the NWSH Environmental/Safety Office.

6.9.2 Regional or Operating Unit Environmental/Safety Coordinator

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters and field offices or operating units.

b. Shall ensure that procedures are developed at regional headquarters or operating unit facilities.

c. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this section.

d. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of the section every two years.

6.9.3 Station Manager

a. Shall have oversight over the implementation of this section and ensure that the requirements of this section are followed by individuals at the NWS facility.

b. Shall ensure sufficient personnel and funding are available to enable compliance with all applicable requirements of this section.

c. Shall review or delegate review of this section on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

6.9.4 Environmental or Environmental/Safety Focal Point or Designated Person

a. Shall ensure any tasks delegated to them by the Station Manager are implemented in accordance with the requirements of this section.

6.9.5 Employees

a. Individual employees affected by this section are required to read, understand and comply with the requirements of this section.

b. Report all violations of the requirements of this section to their supervisor or Environmental Focal Point.

6.11 References

None.